

October 19, 2006

Dr. James M. Shuler  
Manager, Packaging Certification Program  
U.S. Department of Energy  
Office of Safety Management and Operations, EM-60  
1000 Independence Avenue, S.W.  
Washington, DC 20585

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - MODEL NO. S300 FISSILE  
MATERIAL TRANSPORT PACKAGE (TAC NO. L24008)

Dear Dr. Shuler:

This is in response to your letter dated August 23, 2006. In which you requested U.S. Nuclear Regulatory Commission (NRC) approval of Los Alamos National Laboratory's (LANL) Model No. S300 Fissile Material Transport Package.

During our review of this application we determined that we need the information identified in the enclosure to this letter to complete our review. In order for us to complete our review of this application on a schedule necessary to support your needs, we are requesting that you provide this information within 10 days from the date of this letter.

Should you have any questions regarding this matter, please do not hesitate to contact me at (301) 415-8531.

Sincerely,  
/RA/

Stewart Brown, Senior Project Manager  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

Docket No.: 71-9329

Enclosure: Request for Additional Information

cc w/encl: Julia Whitworth, LANL  
Justin Griffin, LANL

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 U.S. Department of Energy  
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Request for Additional Information  
U.S. Department of Energy (DOE)  
(Los Alamos National Laboratory)  
Docket No. 71-9329  
Model S300 Fissile Material Transport Package

Chapter 2. Structural Evaluation

1. Provide information to justify that no other orientations will cause more damage than the two orientations tested for the four-foot free drops under normal conditions of transportation (NCT).

In the four-foot free drop tests performed under NCT, only two orientations were chosen, namely horizontal (i.e., side drop) and center of gravity over the corner. Title 10 CFR Part 71 specifies that tests should be performed at an orientation producing maximum damage. Justification is needed to substantiate that either one of the two orientations tested produces maximum damage.

This information is required by the staff to assess compliance with 10 CFR 71.71(c)(7).

2. Provide information to justify that for the 30-foot free drop tests performed under hypothetical accident conditions (HAC), that the orientation of the inner bolted vessel (the pipe component) with the lid in the vertical direction (bottom end drop) resulted in the most severe impact conditions. The purpose of the HAC tests is to induce the maximum damage, such as dislodging the lid, shearing the lid bolts or causing a loss of leaktight condition.

In the 30-foot free drop tests performed on the pipe component, without the protection of the drum and foam insulation, under HAC, the only orientation tested was with the pipe component lid in the vertical direction (bottom end drop). Title 10 CFR Part 71 specifies that tests should be performed at an orientation producing maximum damage. Justification is needed to demonstrate that the tested orientation produced the maximum damage.

This information is required by the staff to assess compliance with 10 CFR 71.73(c)(1),

3. Expand the discussion provided to justify reliance on a special form capsule (SFC) drop test in lieu of performing the required crush test.

The only justification provided in the Safety Analysis Report was that the 30-foot free drop qualification test results for the SFC can be used to substitute the required crush test. A crush test, as specified in 10 CFR 71.73(c)(2), consists of a steel plate of 1 meter by 1 meter, weighing 1,100 lbs dropping from a height of 30 feet onto the vessel (pipe component) lying on an unyielding flat surface. Further, the pipe component must have undergone a sequence of other tests prior to the crush test. It is not apparent as to why a 30-foot free drop of an undamaged SFC onto an unyielding flat surface is

similar to the required crush test. Accordingly, it is not clear that the drop test results bound the crush test results.

This information is required by the staff to assess compliance with 10 CFR 71.73(c)(2).

#### Chapter 6. Criticality Evaluation

1. Provide justification for using a Criticality Safety Index (CSI) of zero. Although, the S300 package was conservatively evaluated in an infinite array for both NCT and HAC, it appears that the loading limits imposed by a CSI calculated under 10 CFR 71.23 for plutonium-beryllium sources was not noted in the evaluation.

This information is necessary to determine the safety of the package in compliance with 10 CFR Parts 71.23, 71.35, and 71.59.

#### Chapter 7. Package Operations

1. Provide justification for not including in Section 7.1.3, an action specifying the need to determine the level of non-fixed (*i.e.*, removable) radioactive contamination on the external surfaces of a package prior to offering that package for shipment.

This information is necessary to determine compliance with 10 CFR 71.87(l).

2. Provide justification for not including in Section 7.1.3, an action specifying the need to determine external radiation levels around any package prior to offering that package for shipment.

This information is necessary to determine compliance with 10 CFR 71.47 and 71.87(j).

#### Chapter 8. Acceptance Tests and Maintenance Program

1. Provide either confirmation that each packaging will only be used once or revise Section 8.2, to include a maintenance program that is adequate to assure that the packaging effectiveness is maintained throughout the service life of the packaging.

This information is necessary to determine compliance with 10 CFR 71.31(c).

#### Chapter 9. Quality Assurance (QA)

1. Provide a reference to the document that requires DOE field offices to inspect and approve the QA programs of prospective shippers and receivers for equivalency to NRC's QA program requirements. Also, provide a description and reference for the procedure/guidance document that provides the guidance for implementation of this DOE requirement.
2. Provide details as to the specific QA program that will control activities associated with the Model No. S300 certificate of compliance. In the Safety Analysis Report, at least three QA program documents were discussed. However, it is not clear from the

discussion which QA program would be used for which activity, such as design, fabrication, maintenance, and repairs.